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CARTOGRAPHIC EVALUATION OF SKYLAB-A S-192 SCANNER IMAGES

EREP Investigation Number 497

Period Covered: 1 November 1973 - 31 January 1974

NASA Purchase Order T-4111B  
Principal Investigations Management Office  
Lyndon B. Johnson Space Center  
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Reston, Virginia

Quarterly Progress Report

(E74-10305) CARTOGRAPHIC EVALUATION OF  
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Progress Report, 1 Nov. 1973 - 31 Jan.  
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(a) Overall Status

Since the last quarterly report (1 August 1973 - 31 October 1973)  
the following data have been received:

<u>Data</u>	<u>Task Site</u>	<u>Location</u>	<u>Date Received</u>
S-192 SL2 pass 9 screening film 70 mm channels 2, 7 & 11	933548 933669	Lake Erie Chesapeake Bay	11/14/73
S-192 SL3 pass 14 screening film 5" channels 2, 7 & 11	933548 933669	Lake Erie Chesapeake Bay	12/10/73
S-192 SL3 pass 36 screening film 5" channels 2, 7 & 11	933669	Chesapeake Bay	12/10/73
S-192 SL2 pass 2 SD55-1 radio- metrically corrected film 5" channel 7 & 9	933136	San Francisco	1/11/74
S-190A 9" transparencies SL2 pass 2 Mag 04-115/121 05 & 06 - 099/105	933136	San Francisco	11/16/73
S-190A 9" tranparencies SL2 pass 3 Mag 04-194/204 05 & 06 - 170/180	933396	Phoenix	11/20/73
S-190A 9" transparencies SL2 pass 9 Mag 16-162/166 17 & 18 - 154/158	933548	Lake Erie	11/20/73
S-190A 9" transparencies SL2 pass 9 Mag 16-168/178 17 & 18 - 160/170	933669	Chesapeake Bay	11/20/73
S-190A 9" transparencies SL2 pass 7 Mag 10-235/246 11 & 12 - 219/230	933396	Dakotas	11/30/73
S-190A 70 mm transparencies SL2 pass 3 Mag 04-194/204 05 & 06 - 170/180	933396	Phoenix	11/30/73
S-190A 70 mm transparencies SL2 pass 9 Mag 16-162/166 17 & 18 - 154/158	933548	Lake Erie	11/30/73

<u>Data</u>	<u>Task Site</u>	<u>Location</u>	<u>Date Received</u>
S-190A 70 mm transparencies SL3 pass 14 Mag 22, 23 & 24 - 184/193	933548	Lake Erie	1/15/74
S-190A 70 mm transparencies SL3 pass 14 Mag 22, 23 & 24 - 191/200	933669	Chesapeake Bay	1/15/74
S-190A 70 mm transparencies SL3 pass 36 Mag 40, 41 & 42 - 118/127	933669	Chesapeake Bay	1/15/74
S-190B 9" transparencies SL2 pass 7 Mag 81-310/322	933396	Dakotas	11/15/73
S-190B 5" transparencies SL3 pass 14 Mag 83-150/173	933548 933669	Lake Erie Chesapeake Bay	1/22/74
S-190B 5" transparencies SL3 pa pass 36 Mag 86-294/305	933669	Chesapeake Bay	1/22/74

In addition to the above data, several SL2 and SL3 Data Books for the S-190A, S-190B, S-192 and S-193 sensors have been received along with two S-193 magnetic tapes. Also, the S-192 screening film received on September 20, and previously reported as being for task site 933396 Dakotas, is actually for the alternate site Phoenix.

Study of the radiometrically corrected channels 7 and 9 S-192 imagery of task site 933136 San Francisco, indicates that the contrast of these channels is very low and it will be extremely difficult to identify acceptable ground control points. It appears that a shorter wavelength band, such as channel 5, will be required to conduct this investigation.

Of the other S-192 screening film, the SL3 pass 14 data of Chesapeake Bay is best. However, it appears that channel 5 data will be required in

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order to identify the road network and other control points. Channel 5 screening film and radiometrically corrected film and a color composite of channels 3, 5 and 7 was ordered on January 31, 1974. The SL3 data from pass 36 is of good quality but does not cover the area of prime interest.

The S-192 screening film of Phoenix looks quite good but it is on 70 mm film and is thus rather difficult to evaluate. Five inch screening film of channel 5, radiometrically corrected film of channel 5 and color composites of channels 3, 5 and 7 were ordered on January 31.

In general, the contact size S-190A and S-190B photographs are all of good quality and will be usable for this investigation. However, the enlargements on 9-inch film appear to be seriously degraded. Apparently the fixed focus enlarger has an inadequate optical system. While this investigation can and will use the contact size photographs, the degraded quality of the enlarged photographs may seriously affect other investigations, particularly photomapping. It is only through enlargement that the quality of the original color films can be maintained since available materials will not maintain this resolution at contact scales. Therefore, I recommend that NASA try to correct the enlarger problems.

The major problem encountered in the investigation thus far has been the non-availability of radiometrically corrected and color composite S-192 film. Until they are available to the investigator no significant progress can occur.

(b) Actions Required

NASA should expedite the delivery of S-192 radiometrically corrected and color composite film.

(c) Expected Accomplishments During Next Reporting Period

Assuming early receipt of the S-192 imagery the following tasks will be accomplished during the next reporting period.

1. Selection of ground control points on the Chesapeake Bay and Phoenix S-192 imagery.
2. Measurement of point coordinates.
3. Computer processing of the data to assess the cartographic quality of both the screening film and the corrected film.
4. Detailed inspection and evaluation of additional SL3 and SL4 data.
5. Order corrected film and color composites of additional sites.

(d) Significant Results

Channels 2 and 11 of the S-192 multispectral scanner have rather low contrast and are of little utility in identifying ground control features. Channel 7 provides a good rendition of surface water distribution.

The fixed enlargements (2X or 4X) of the S-190A and S-190B photographs have seriously degraded resolution. Wherever possible the contact size photographs should be used.

(e) Summary Outlook for Remaining Effort

Further work will concentrate on task sites 933669 Chesapeake Bay and alternate task site 933396 Phoenix using SL3 and SL2 data. Initial evaluation of these sites should be completed in the next quarterly

reporting period. Additional analysis of other sites depends on the quality of SL3 and SL4 data collected over these sites.

(f) Travel Summary and Plans

No travel was done by the PI for this investigation during the reporting period and none is planned during the next quarter.